

OBSERVATIONS AT HONOLULU.

Meteorological observations at Honolulu, Republic of Hawaii, by Curtis J. Lyons, Meteorologist to the Government Survey.

Pressure is corrected for temperature and reduced to sea level, but the gravity correction, -0.06 , is still to be applied.

The absolute humidity is expressed in grains of water, per cubic foot, and is the average of four observations daily.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 10.

The rainfall for twenty-four hours is given as measured at 6 a. m. on the respective dates.

June, 1895.	Pressure at sea level.			Temperature.				Humidity.			Wind.		Cloudiness.	Rain measured at 6 a. m.
	9 a. m.	3 p. m.	9 p. m.	6 a. m.	3 p. m.	9 p. m.	Maximum.	Minimum.	Relative.	Absolute.	Direction.	Force.		
	Inch.	Inch.	Inch.	°	°	°	°	°	%	%			Inch.	
1..	30.14	30.06	30.10	75	82	75	84	73	64	75	ne.	3	3-5	0.01
2..	30.08	30.02	30.09	72	79	75	80	70	78	72	ene.	1	0-2	0.09
3..	30.09	30.01	30.06	72	81	72	82	69	85	85	s.	1	0-2	0.00
4..	30.08	30.00	30.06	75	81	74	84	69	86	74	ne.	3-0	0-2	0.08
5..	30.05	29.99	30.07	74	81	74	84	70	83	85	nne.	2	2-2	0.01
6..	30.08	30.02	30.10	70	82	78	86	68	67	70	ene.	3	3-3	0.00
7..	30.10	30.04	30.12	73	78	75	82	71	70	70	ne.	3	4-4	0.00
8..	30.10	30.04	30.10	73	79	75	81	72	68	70	nne.	3	3-3	0.05
9..	30.10	30.04	30.07	71	78	73	81	70	80	80	ne.	3	3-3	0.10
10..	30.08	30.00	30.06	73	79	74	81	71	71	77	ene.	3	3-3	0.21
11..	30.05	29.99	30.05	73	80	75	83	69	66	70	ne.	4	5-5	0.09
12..	30.09	30.03	30.08	75	80	78	82	74	71	67	ene.	4	5-5	0.00
13..	30.13	30.04	30.10	75	78	73	81	74	72	74	ene.	4	6-6	0.00
14..	30.12	30.03	30.09	74	75	72	81	73	70	77	nne.	4	5-5	0.07
15..	30.07	30.00	30.05	72	77	74	80	70	67	70	ne.	4	5-5	0.29
16..	30.06	30.00	30.07	73	77	75	81	73	74	70	ne.	4	4-4	0.12
17..	30.09	30.04	30.10	73	81	78	83	72	62	67	ne.	4	3-3	0.08
18..	30.13	30.06	30.12	75	81	75	84	74	63	77	ne.	4	3-3	0.00
19..	30.12	30.05	30.10	73	78	74	80	72	70	87	ne.	5	5-5	0.11
20..	30.09	30.05	30.11	72	81	75	83	67	67	70	ene.	4	3-7	0.01
21..	30.09	30.07	30.14	73	79	75	84	70	67	74	ne.	3	4-4	0.00
22..	30.13	30.07	30.13	73	80	76	85	73	75	72	1 ne.	3	3-3	0.00
23..	30.13	30.07	30.14	75	80	76	85	71	71	68	7.2 ne.	3	4-4	0.08
24..	30.14	30.07	30.12	75	82	75	84	74	60	72	6.6 ne.	3	3-3	0.00
25..	30.11	30.04	30.09	69	82	75	84	67	62	74	6.8 ne.	3	3-3	0.00
26..	30.10	30.05	30.12	73	78	73	83	73	65	66	6.7 ne.	3	3-3	0.00
27..	30.08	30.04	30.06	73	78	73	81	71	64	70	6.3 nne.	5-8	0-0	0.00
28..	30.07	30.00	30.05	72	79	73	83	68	67	67	6.3 ne.	4	5-5	0.07
29..	30.08	30.04	30.10	72	80	78	81	71	74	70	7.0 ene.	4	5-5	0.08
30..	30.14	30.10	30.16	75	82	73	83	73	62	80	7.0 ne.	4	3-3	0.02
...	30.10	30.03	30.10	73.0	79.6	74.7	82.5	71.0	66.9	72.7	6.9			1.52

The monthly summary for June is: Mean temperature, 76.7, or 0.5 above normal; extreme temperatures, 85.0 and 67.0; mean pressure, 30.07, or about normal; total rainfall, 1.52, or 5 per cent below normal.

FORECASTING MONSOON RAINS.

It has been the practice for the Meteorological Office of India, since 1885, to prepare annually, in June, a brief summary of the condition of the winter snowfall in the Himalayan and Afghan mountains, as also a statement of the peculiarities or abnormal features of the weather of India during the preceding months, January to May, inclusive, and, finally, to make a forecast of the probable character of the rains during the approaching southwest monsoon season. This forecast is not so much a prediction, based upon the laws of nature, as a statement of probabilities drawn from past experience, and simply means that apparently the chances in favor of any event that is predicted as probable are at least as large as 10 to 4, and, when very probable, as 10 to 2; that is to say, 71 and 83 per cent.

According to the memorandum for the current year, published at Simla on June 3, 1895, the chief features or conditions that determine the extension and general strength of the southwest monsoon current are (1) the amount and date of the cold weather snowfall in the mountain districts bordering northern India; (2) the local peculiarities of the weather in India itself immediately antecedent to the advance of the monsoon currents from the coasts in to the interior; these abnormal features are, on the whole, best estimated by the departures of barometric pressures from normal values in different parts of India; (3) local peculiarities of the weather over the Bay of Bengal and the Arabian Sea, over which the monsoon currents pass before they reach India.

With regard to the first of these, viz, the snowfall data in the mountainous regions during the winter of 1894-'95, the total for the year has been light, and the accumulation at the end of May, 1895, much smaller than for May, 1894. With regard to the second item, viz, the abnormal features of Indian weather, it is noted that there was an abnormal distribution of the snowfall; a corresponding abnormal pressure and temperature connected with the distribution of snow in the western Himalayas; a prevalence of more disturbed weather than usual in March and April, followed by very hot weather in May over the whole of India. With regard to the third item, viz, the weather over the Bay of Bengal, not much useful information had been received up to date, but the meteorological conditions were less favorable for a strong monsoon than they were in 1894.

By a comparison of the past twenty-six years some resemblances were found between corresponding seasons of the present and past years. The year 1893 was the coldest on record in India, and the rainfall was much greater than in any preceding year. The figures show that during the past five years India has gone through a period of heavy rainfall, such as it has not experienced for at least thirty years. The annual anomalies of rainfall are shown in the following table:

Annual rainfall in India.

Year.	No. of provinces that reported the rainfall as being—			Average departure from the normal for the Indian area only.		Year.	No. of provinces that reported the rainfall as being—			Average departure from the normal for the Indian area only.	
	Excessive.	Normal.	Deficient.	Excess.	Deficiency.		Excessive.	Normal.	Deficient.	Excess.	Deficiency.
1884...	4	.....	16	Inches.	Inches.	1880..	13	1	10	Inches.	Inches.
1885...	8	1	11	.....	-5.52	1881..	15	9	.....	.....	-1.56
1886...	6	.....	14	.....	-0.77	1882..	17	1	6	.....	+0.10
1887...	8	2	10	.....	-2.09	1883..	11	1	12	.....	+2.64
1888...	5	.....	16	.....	-6.63	1884..	12	.....	10	.....	-0.12
1889...	8	1	13	.....	-0.40	1885..	15	.....	7	.....	+1.49
1890...	14	.....	10	.....	-1.49	1886..	14	.....	8	.....	+1.17
1891...	12	1	11	.....	-0.93	1887..	11	.....	11	.....	+2.77
1892...	14	3	7	.....	-2.31	1888..	10	.....	12	.....	+2.04
1893...	3	1	20	.....	-4.46	1889..	15	.....	8	.....	-1.13
1894...	15	3	6	.....	+4.64	1890..	14	1	8	.....	+1.92
1895...	16	.....	8	.....	+2.38	1891..	6	.....	17	.....	+0.46
1896...	6	.....	18	.....	-4.49	1892..	15	.....	8	.....	+0.30
1897...	10	.....	14	.....	-4.23	1893..	22	.....	1	.....	+1.55
1898...	17	1	6	.....	-6.34	1894..	17	.....	6	.....	+8.94
1899...	16	2	6	.....	-1.69					.....	+6.48

After a full statement of the prevailing conditions, Mr. Eliot concludes that it is probable that the monsoon currents during 1895 will be of normal strength, and that the monsoon of Bengal Bay is more likely to be above its normal strength than that of Bombay. The Bombay current is more likely to be retarded as to the time when it sets in than the Bengal current, but both will set about the normal time. As to the monsoon rains the general conclusion is—

That the rainfall may be deficient to a slight or moderate extent in Sind, Cutch, the southwest and central Punjab, and west Rajputana; that it will very probably be at least normal in amount in the northern half of the peninsula, central India, east Rajputana, the east Punjab, the greater part of the northwestern provinces, Bihar, Chota Nagpur, and perhaps Burma, and may be in moderate excess in the Gangetic plain and central India.

NOTE.—As the editor has said on a previous occasion, the southwest monsoon of India is a part of such a large movement of the atmosphere that he can not think that the variations in its strength and time of occurrence are determined to any important extent by the so-called local weather conditions of previous months prevailing over India and its immediate borders, but must rather consider these winter conditions and the following summer monsoon to be alike dependent upon much larger factors in the general circulation of the atmosphere.